

=> FILE REG

FILE 'REGISTRY' ENTERED AT 14:29:25 ON 12 DEC 2006
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=> D HIS

FILE 'HCAPLUS' ENTERED AT 12:03:32 ON 12 DEC 2006

L1 561 S UTSUGI ?/AU
L2 60182 S MORI ?/AU
L3 27 S L1 AND L2
L4 71 S UTSUGI K?/AU
L5 7227 S MORI M?/AU
L6 10 S L4 AND L5
SEL L6 1 RN

FILE 'REGISTRY' ENTERED AT 12:05:27 ON 12 DEC 2006

L7 15 S E1-E15
SEL L7 1-4 RN
L8 4 S E17-E20

FILE 'HCA' ENTERED AT 12:09:10 ON 12 DEC 2006

L9 8 S L8
L10 471551 S ELECTROLY?
L11 229682 S BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR
L12 4 S L9 AND (L10 OR L11)

FILE 'REGISTRY' ENTERED AT 12:14:49 ON 12 DEC 2006

SEL L7 5 RN
L13 1 S E21

FILE 'HCA' ENTERED AT 12:16:12 ON 12 DEC 2006

L14 590 S L13
L15 210391 S (TRANSITION? OR LANTHANID? OR LANTHANOID? OR LANTHANON?
L16 98342 S RARE#(2A)EARTH?(2A)(METAL#### OR ION OR IONS OR CATION
L17 43 S L14 AND (L15 OR L16)
L18 42 S L17 AND (L10 OR L11)

FILE 'REGISTRY' ENTERED AT 12:18:50 ON 12 DEC 2006

SEL L7 12 RN
L19 1 S E22

FILE 'HCA' ENTERED AT 12:20:33 ON 12 DEC 2006

L20 14890 S APROTIC? OR NONPROTIC? OR NON(W)PROTIC?
L21 1274 S L19 OR VINYLENE#(A)CARBONATE# OR VINYLENECARBONATE#

L22 3 S L12 AND L20
L23 1 S L18 AND L20
L24 7 S L13/D OR L13/DP
L25 0 S L24 AND (L15 OR L16)
L26 7 S L18 AND L21
L27 9258 S (LANTHANID? OR LANTHANOID? OR LANTHANON?) (2A) (METAL####)
L28 1 S (L27 OR L16) AND L18
L29 1 S (L27 OR L16) AND L9

FILE 'LCA' ENTERED AT 12:29:51 ON 12 DEC 2006

L30 958 S ?CARBONATE?
E ESTERS/CV
L31 112 S E3
L32 265 S ?LACTONE?
L33 59 S (CYCLIC? OR CYCLIZ? OR CYCLIS? OR CROWN?) (2A) ETHER#
L34 14 S (LINEAR? OR STRAIGHTCHAIN? OR STRAIGHT? (2A) CHAIN? OR AL
E ETHERS/CV
L35 84 S E3

FILE 'HCA' ENTERED AT 12:32:51 ON 12 DEC 2006

L36 32 S L18 AND (L30-L35)
L37 14 S L18 AND (L31-L35)

FILE 'REGISTRY' ENTERED AT 12:34:38 ON 12 DEC 2006

E 1,3-PROPANESULTONE/CN
E 1,3-PROPANE SULTONE/CN
L38 1 S E3
E 1,4-BUTANE SULTONE/CN
L39 1 S E3
E SULFORANE/CN
E SULFORANE
E METHANE SULFONIC ACID ANHYDRIDE/CN
E SULFONIC ACID ANHYDRIDE/CN

FILE 'HCA' ENTERED AT 12:40:19 ON 12 DEC 2006

L40 426 S SULFONIC# (3A) ACID# (3A) ANHYDRIDE#
SEL L40 204 RN

FILE 'REGISTRY' ENTERED AT 12:42:03 ON 12 DEC 2006

L41 3 S E1-E3

FILE 'HCA' ENTERED AT 12:42:18 ON 12 DEC 2006

SEL L40 203 RN

FILE 'REGISTRY' ENTERED AT 12:42:37 ON 12 DEC 2006

L42 35 S E4-E38

FILE 'LREGISTRY' ENTERED AT 12:43:24 ON 12 DEC 2006

L43 STR
L44 0 S L43
L45 0 S L43 FUL

FILE 'REGISTRY' ENTERED AT 12:44:30 ON 12 DEC 2006
L46 0 S L43

FILE 'LREGISTRY' ENTERED AT 12:44:56 ON 12 DEC 2006
L47 STR
L48 0 S L47
L49 3 S L47 FUL

FILE 'REGISTRY' ENTERED AT 12:46:14 ON 12 DEC 2006
L50 1440 S ?SULFONIC/CNS AND ANHYDRIDE#
L51 555 S SULTONE#
E SULFOLENE/CN
L52 2 S E3
L53 76 S SULFOLENE#
L54 2071 S L38 OR L39 OR L50 OR L51 OR L52 OR L53

FILE 'HCA' ENTERED AT 12:48:59 ON 12 DEC 2006
L55 16013 S L54
L56 2 S L18 AND L55
L57 2 S L26 AND L55
L58 1 S L37 AND L55

FILE 'LREGISTRY' ENTERED AT 12:51:28 ON 12 DEC 2006
L59 STR

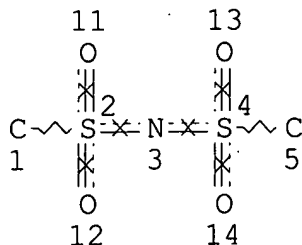
FILE 'REGISTRY' ENTERED AT 12:54:31 ON 12 DEC 2006
L60 50 S L59
L61 8813 S L59 FUL
SAV L61 WEI013/A
L62 289 S L61 AND (T1 OR T2 OR T3 OR B2)/PG
L63 94 S L61 AND LNTH/PG
L64 8445 S L61 NOT (L62 OR L63)

FILE 'HCA' ENTERED AT 14:10:15 ON 12 DEC 2006
L65 94 S L63
L66 247 S L62
L67 7212 S L64
L68 5 S L65 AND L55
L69 5 S L68 AND (L10 OR L11)
L70 5 S L68 AND (52 OR 72)/SC,SX
L71 3 S L66 AND L55
L72 1 S L71 AND (L10 OR L11 OR 52/SC,SX OR 72/SC,SX)
L73 226 S L67 AND L55
L74 5 S L73 AND (L15 OR L16)

L75 3 S L74 AND (L10 OR L11 OR 52/SC,SX OR 72/SC,SX)
L76 6 S L12 OR L22 OR L23 OR L56 OR L57 OR L58 OR L69 OR L70 OR

FILE 'REGISTRY' ENTERED AT 14:29:25 ON 12 DEC 2006

=> D L61 QUE STAT
L59 STR



NODE ATTRIBUTES:

NSPEC IS RC AT 1
NSPEC IS RC AT 5
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 9

STEREO ATTRIBUTES: NONE

L61 8813 SEA FILE=REGISTRY SSS FUL L59

100.0% PROCESSED 12269 ITERATIONS
SEARCH TIME: 00.00.01

8813 ANSWERS

=> FILE HCA

FILE 'HCA' ENTERED AT 14:30:02 ON 12 DEC 2006

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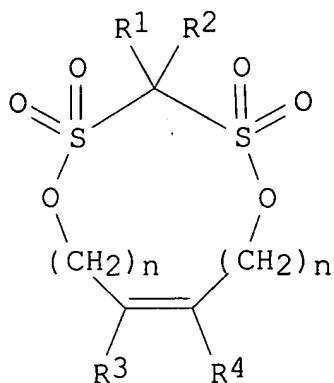
=> D L76 1-6 CBIB ABS HITSTR HITIND

L76 ANSWER 1 OF 6 HCA COPYRIGHT 2006 ACS on STN

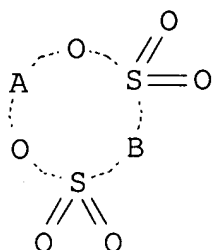
141:334876 **Electrolyte** solution for secondary **battery**
and the **battery**. Kusachi, Yuki; Utsuki, Koji (NEC Corp.,

Japan). Jpn. Kokai Tokkyo Koho JP (2004281325 A2 20041007, 27 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-74054 20030318.

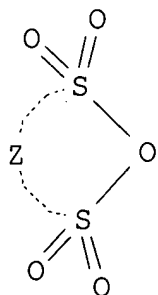
GI



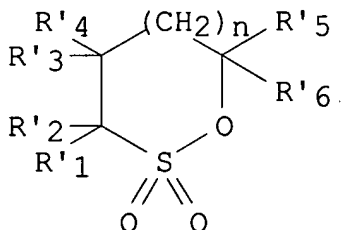
I



II



III



IV

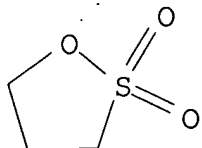
AB The **electrolyte** soln. contains an **aprotic** solvent and an unsatd. cyclic disulfonate ester I, where R1-R4 = H, Me, Et, or halogen and n = integer 0-2. The **electrolyte** soln. may also contain II [A = (substituted) C1-5 (fluoro)alkylene, carbonyl, sulfinyl, or bivalent C2-6 group contg. ether bond connected (fluoro)alkylene units; B = (substituted) alkylene group], III [Z = (substituted) C2-4 alkylene, alkenylene, arom. or heterocyclic group], or IV (n = integer 0-2, R'1-R'6 = H C1-12 alkyl, C3-6 cycloalkyl, or C6-12 aryl group). The **battery** is a secondary Li **battery**.

IT 1120-71-4, 1,3-Propanesultone 259194-36-0
259194-40-6 634598-36-0 634598-37-1

(**electrolyte** solns. contg. cyclic disulfonate esters
and other additives for secondary lithium **batteries**)

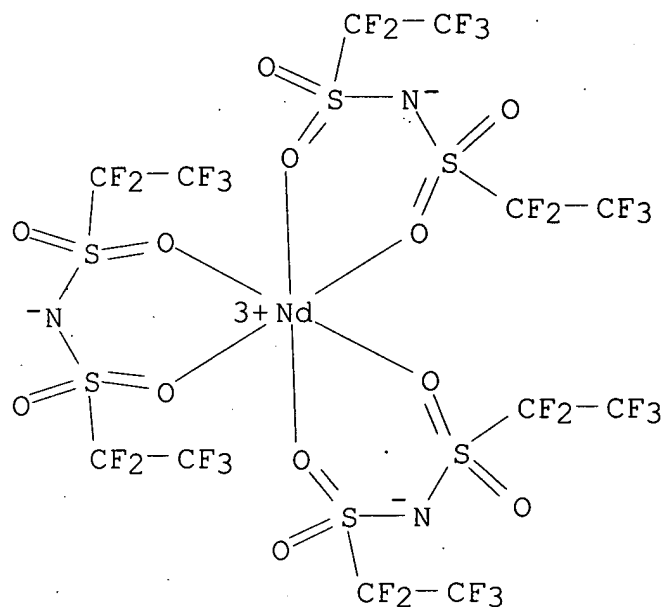
RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



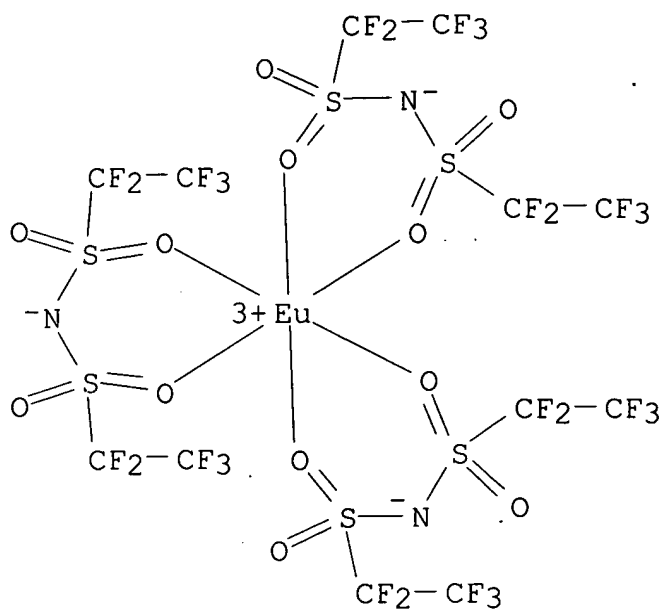
RN 259194-36-0 HCA

CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



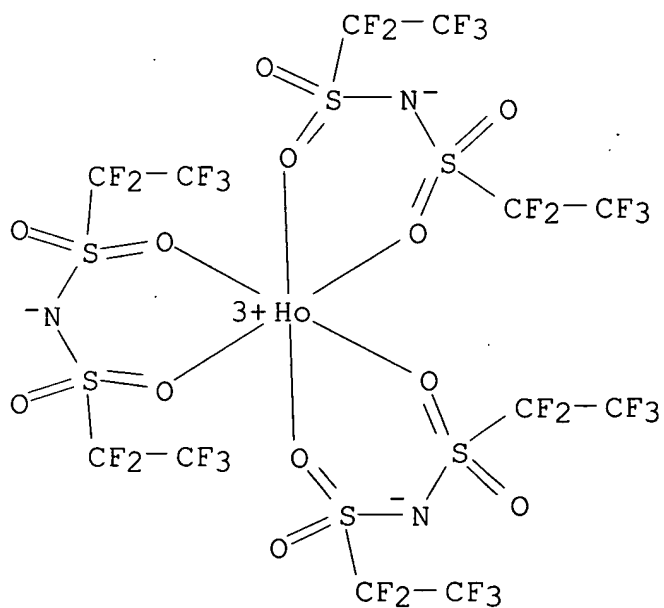
RN 259194-40-6 HCA

CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA

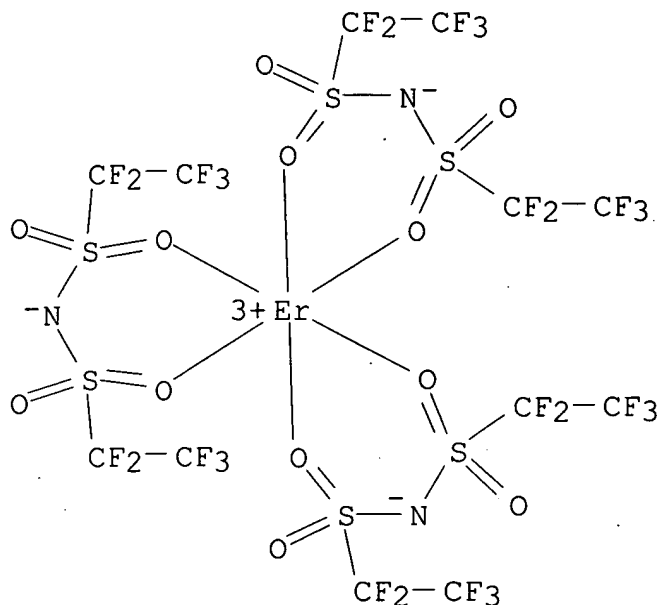
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-κO]ethanesulfonamidato-κO]-, (OC-6-11)-(9CI) (CA INDEX NAME)



RN 634598-37-1 HCA

CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-

κO]ethanesulfonamidato-κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M004-58
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST secondary lithium **battery electrolyte** soln
cyclic disulfonate ester
- IT **Battery electrolytes**
(**electrolyte** solns. contg. cyclic disulfonate esters and other additives for secondary lithium **batteries**)
- IT 769973-24-2 769973-25-3 769973-26-4 769973-27-5
(cyclic disulfonate ester contg. secondary lithium **battery electrolyte** solns.)
- IT 872-36-6, Vinylene carbonate **1120-71-4**, 1,3-Propanesultone
14913-52-1, Neodymium ion (Nd³⁺), uses 18472-30-5, Erbium ion (Er³⁺), uses 22541-18-0, Europium ion (Eu³⁺), uses 22541-22-6, Holmium ion (Ho³⁺), uses **259194-36-0 259194-40-6 634598-36-0 634598-37-1**
(**electrolyte** solns. contg. cyclic disulfonate esters and other additives for secondary lithium **batteries**)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate 132843-44-8
(**electrolyte** solns. contg. cyclic disulfonate esters for secondary lithium **batteries**)

140:184814 **Electrolyte** solution for secondary **battery**

. Utsugi, Koji; Kusachi, Yuki; Yamazaki, Ikiko (NEC Corporation, Japan). Eur. Pat. Appl. EP 1394888 A1 (20040303), 35 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP 2003-90268 20030822. PRIORITY: JP 2002-250441 20020829; JP 2003-52588 20030228; JP 2003-289432 20030807.

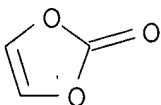
AB The present invention provides a technol. of inhibiting the decompn. of the solvent of the **electrolyte** soln. for a secondary **battery**. Further, the present invention provides a technol. of prohibiting the resistance increase of a secondary **battery** and improving the storage properties such as improving the capacity retention ratio. An **electrolyte** soln. comprising non-proton solvent and cyclic sulfonic ester including at least two sulfonyl groups may be used.

IT **872-36-6, Vinylene carbonate**
132843-44-8

(**electrolyte** soln. for secondary **battery**)

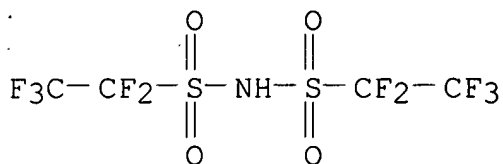
RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 132843-44-8 HCA

CN Ethanesulfonamide, 1,1,2,2,2-pentafluoro-N-
[(pentafluoroethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



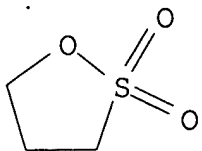
● Li

IT **1120-71-4, 1,3-Propanesultone 259194-36-0**
259194-40-6 634598-36-0 634598-37-1

(**electrolyte** soln. for secondary **battery**)

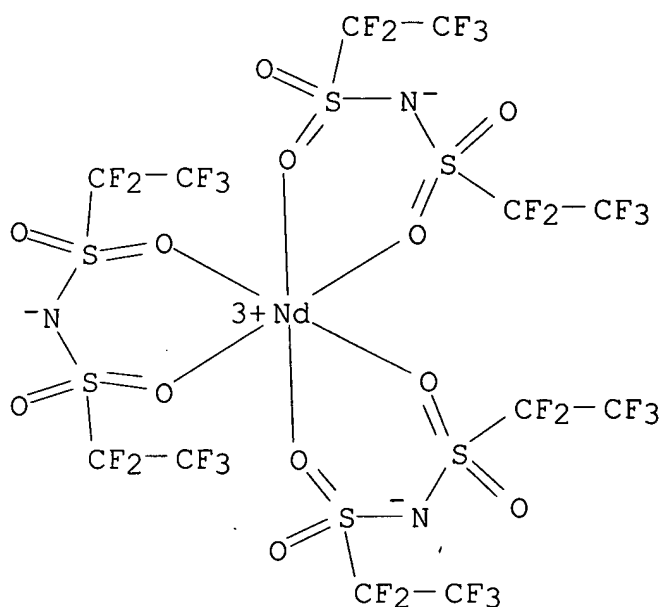
RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



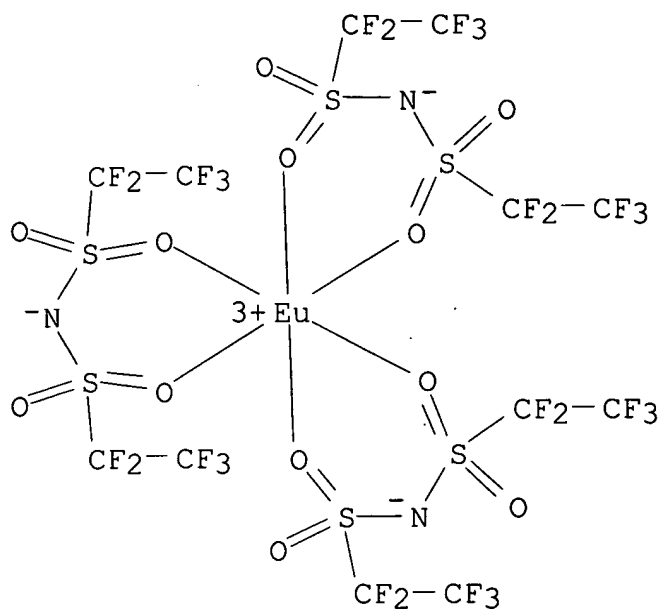
RN 259194-36-0 HCA

CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



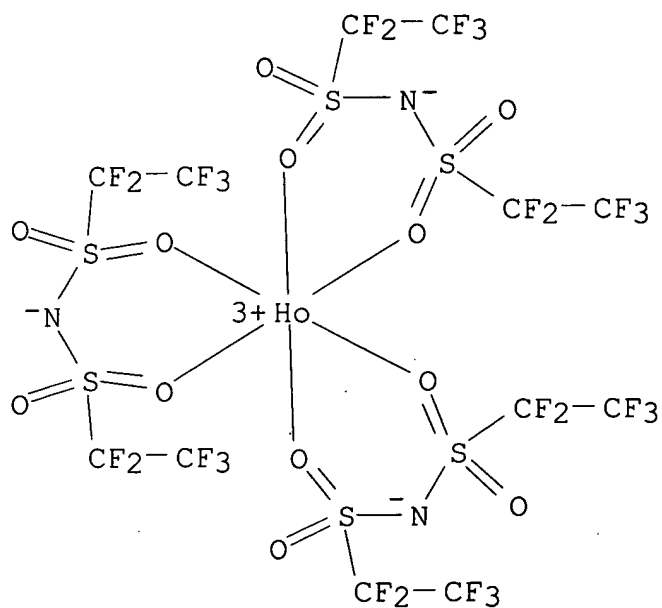
RN 259194-40-6 HCA

CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA

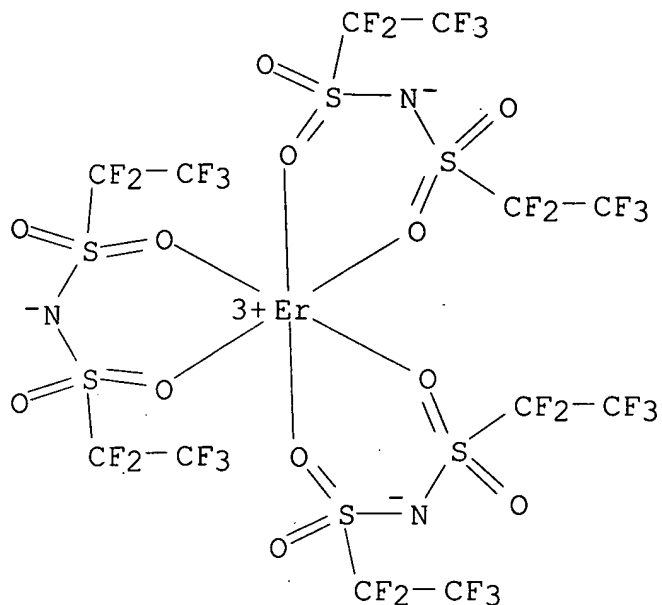
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-κO]ethanesulfonamidato-κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-37-1 HCA

CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-

κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M006-16
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST **electrolyte** soln secondary **battery**
- IT **Ethers, uses**
(cyclic; **electrolyte** soln. for secondary battery)
- IT **Battery electrolytes**
(**electrolyte** soln. for secondary battery)
- IT **Ethers, uses**
Rare earth complexes
Transition metal complexes
(**electrolyte** soln. for secondary battery)
- IT Carboxylic acids, uses
(esters, aliph.; **electrolyte** soln. for secondary battery)
- IT Sulfonic acids, uses
(esters, cyclic; **electrolyte** soln. for secondary battery)
- IT Secondary **batteries**
(lithium; **electrolyte** soln. for secondary battery)
- IT **Lactones**
(γ -; **electrolyte** soln. for secondary

battery)

- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 463-79-6D, Carbonic acid, ester, cyclic 463-79-6D, Carbonic acid, ester, linear 497-62-1
- 872-36-6, Vinylene carbonate**
- 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-00-8D, Neodymium, complex 7440-44-0, Carbon, uses 7440-52-0D, Erbium, complex 7440-53-1D, Europium, complex 7440-60-0D, Holmium, complex 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 12057-17-9, Lithium manganese oxide LiMn_2O_4 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 113066-89-0, Cobalt lithium nickel oxide $\text{Co}_0.2\text{LiNi}_0.8\text{O}_2$
- 132843-44-8**

(electrolyte soln. for secondary battery)

- IT **1120-71-4**, 1,3-Propanesultone 14913-52-1, Neodymium(3+), uses 18472-30-5, Erbium(3+), uses 22541-18-0, Europium(3+), uses 22541-22-6, Holmium(3+), uses 37181-39-8, Triflate 99591-73-8 99591-74-9 99591-80-7 **259194-36-0 259194-40-6**
- 634598-36-0 634598-37-1** 659737-87-8 659737-88-9 659737-89-0 659737-90-3

(electrolyte soln. for secondary battery)

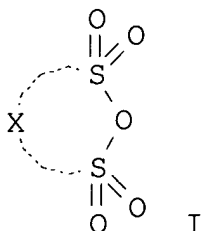
L76 ANSWER 3 OF 6 HCA COPYRIGHT 2006 ACS on STN

140:131080 **Electrolyte** solution for the secondary

battery and the **battery** using the solution.

Utsuki, Koji; Mori, Mitsuhiro (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2004022336 A2 20040122, 24 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-175648 20020617.

GI



- AB The **electrolyte** soln. has a sulfonic acid anhydride I [X = (substituted) C2-4 alkylene, (substituted) C2-4 alkenyl, or (substituted) arom. ring] in an **aprotic** solvent. The

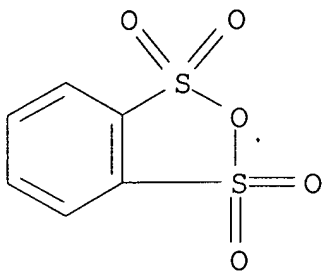
battery has a cathode, an anode, and the above
electrolyte soln.

IT 33356-82-0

(**electrolyte** solns. contg. sulfonic acid anhydrides for
secondary **batteries**)

RN 33356-82-0 HCA

CN 2,1,3-Benzoxadithiole, 1,1,3,3-tetraoxide (9CI) (CA INDEX NAME)



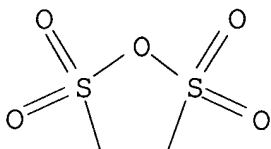
IT 4378-87-4 82727-20-6 259194-36-0

259194-40-6 634598-36-0 634598-37-1

(**electrolyte** solns. contg. sulfonic acid anhydrides for
secondary **batteries**)

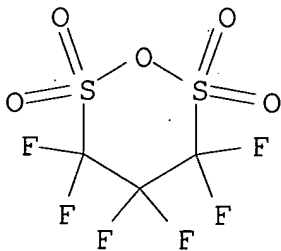
RN 4378-87-4 HCA

CN 1,2,5-Oxadithiolane, 2,2,5,5-tetraoxide (9CI) (CA INDEX NAME)



RN 82727-20-6 HCA

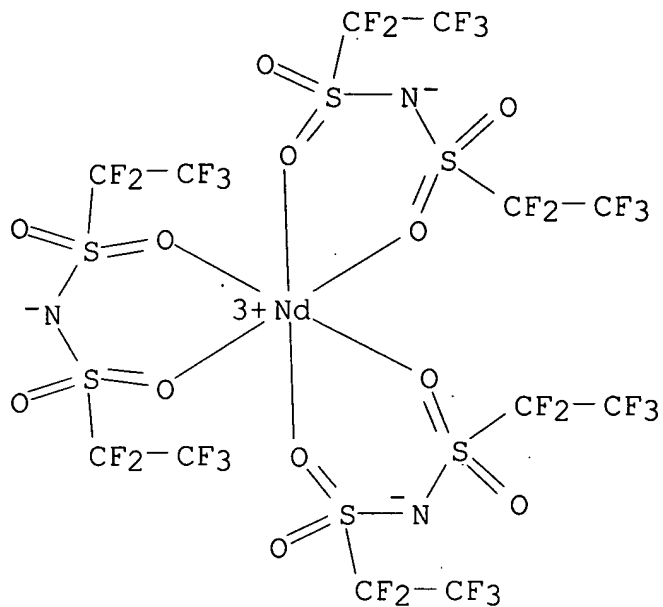
CN 1,2,6-Oxadithiane, 3,3,4,4,5,5-hexafluoro-, 2,2,6,6-tetraoxide (9CI)
(CA INDEX NAME)



RN 259194-36-0 HCA

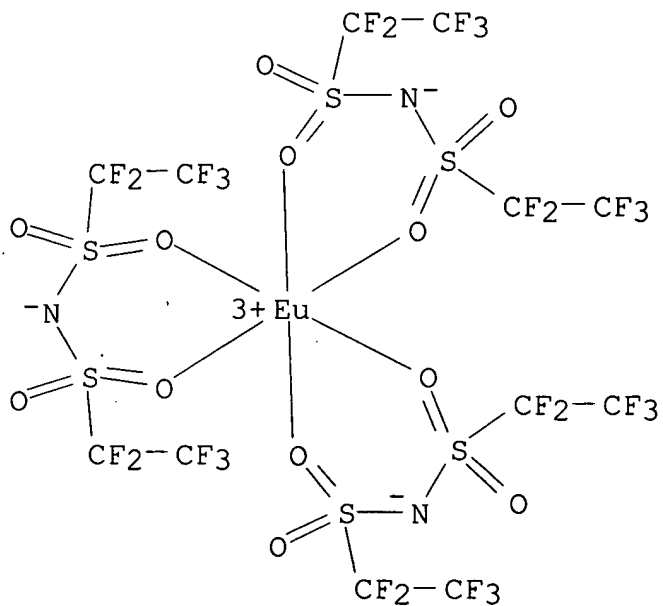
CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl]-

κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)

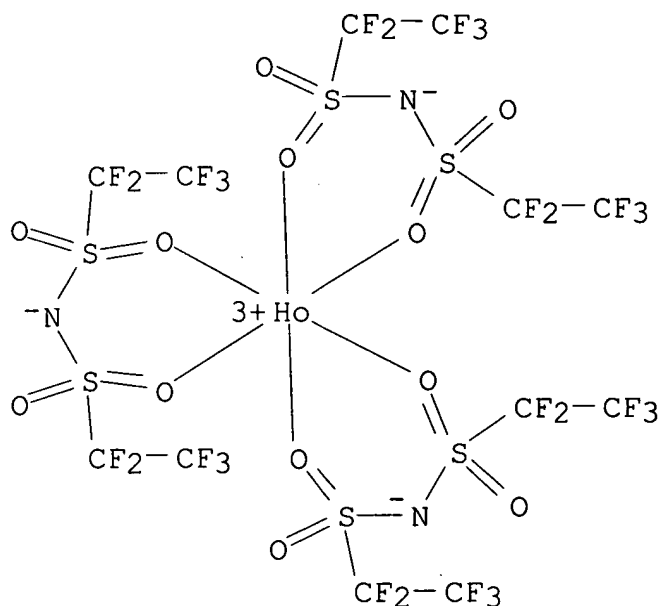


RN 259194-40-6 HCA

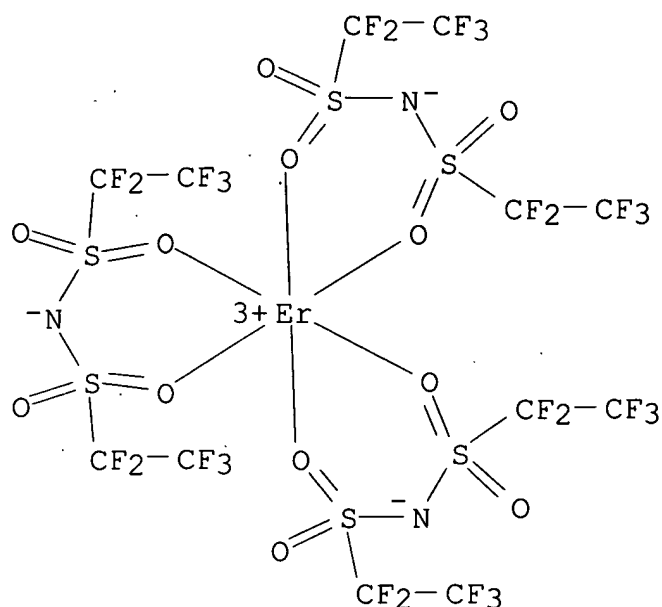
CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-37-1 HCA
CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M004-02; H01M004-58
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST secondary **battery electrolyte** sulfonic acid anhydride
- IT **Battery electrolytes**
Secondary **batteries**
(**electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 7440-44-0, Carbon, uses
(amorphous; anode; **electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses
(anode; **electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 12057-17-9, Lithium manganese oxide (LiMn2O4) 21324-40-3, Lithium hexafluorophosphate
33356-82-0 132843-44-8
(**electrolyte** solns. contg. sulfonic acid anhydrides for secondary **batteries**)
- IT 872-36-6, Vinylene carbonate **4378-87-4** 76076-58-9
82727-20-6 259194-36-0 259194-40-6
634598-36-0 634598-37-1 648922-25-2
648922-26-3 648922-27-4
(**electrolyte** solns. contg. sulfonic acid anhydrides for

secondary **batteries**)

L76 ANSWER 4 OF 6 HCA COPYRIGHT 2006 ACS on STN

140:29537 **Electrolyte** solution for secondary lithium

battery and the **battery** using the solution.

Utsugi, Koji; Mori, Mitsuhiro (NEC Corporation, Japan). PCT Int. Appl. WO 2003105268 A1 20031218, 31 pp. DESIGNATED STATES: W: CA, CN, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP7418 20030611. PRIORITY: JP 2002-170228 20020611.

AB The **electrolyte** soln. comprises at least imide anions, **transition metal ions** and a compd. having a sulfonyl group, in an **aprotic** solvent. The **battery** using the **electrolyte** soln. has long cycle life and high safety.

IT **872-36-6, Vinylene carbonate**

1120-71-4, 1,3-Propane sultone 132843-44-8

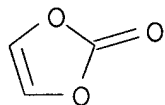
259194-36-0 259194-40-6 634598-36-0

634598-37-1

(**electrolyte** solns. contg. sulfonyl compds., **transition metal ions** and imide anions for secondary lithium **batteries**)

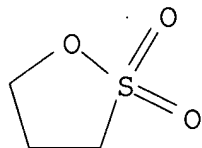
RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



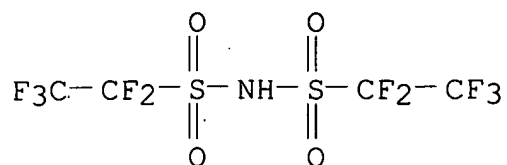
RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 132843-44-8 HCA

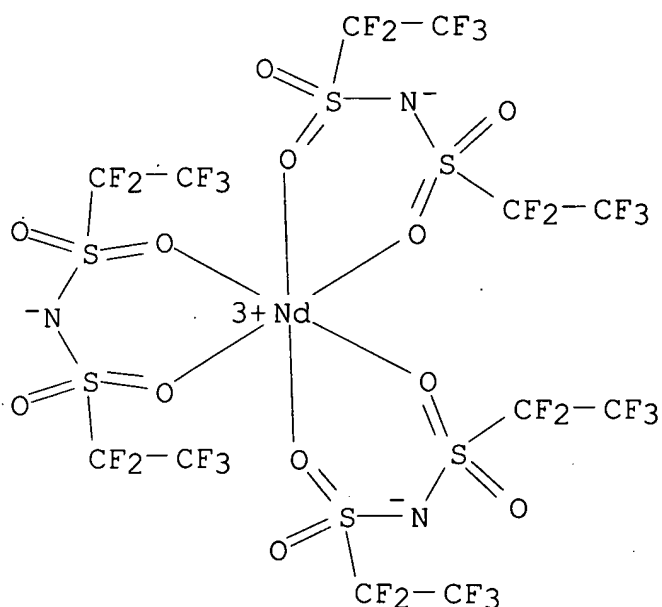
CN Ethanesulfonamide, 1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

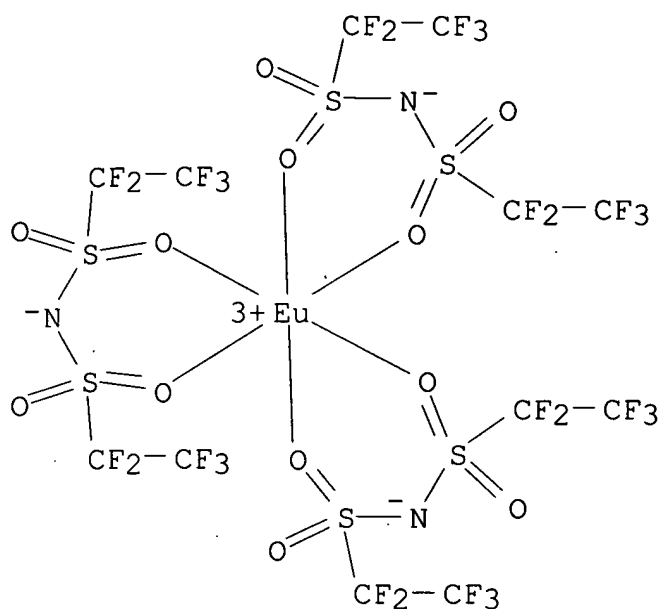
RN 259194-36-0 HCA

CN Neodymium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



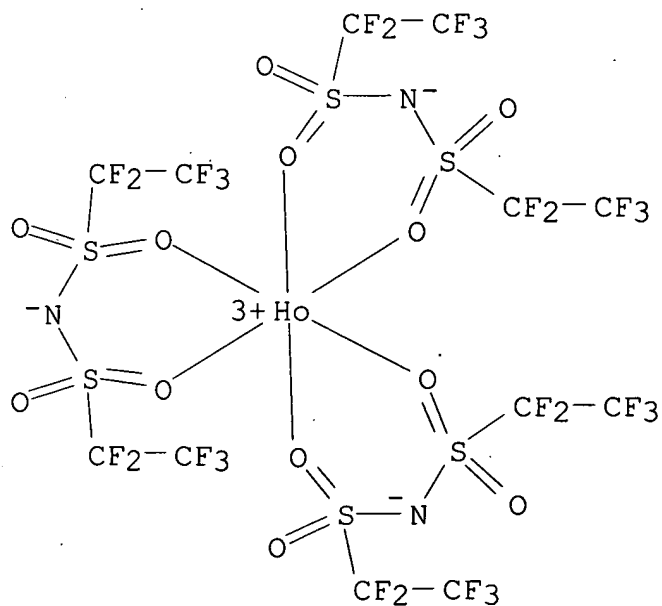
RN 259194-40-6 HCA

CN Europium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-36-0 HCA

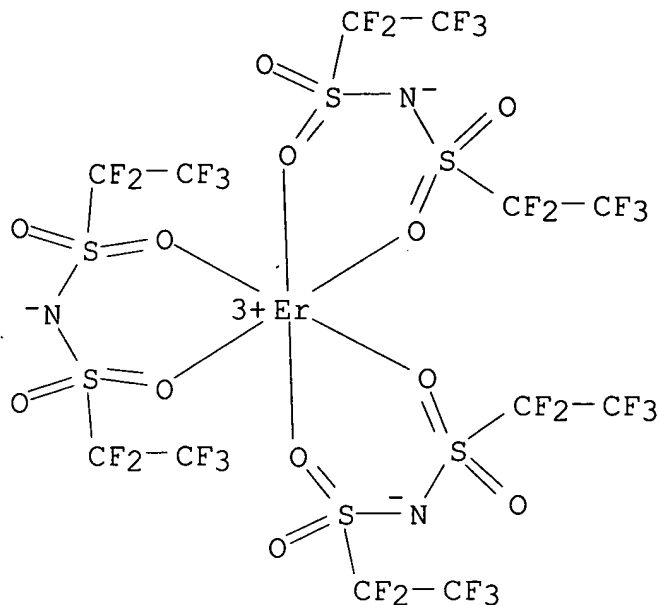
CN Holmium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl- κ O]ethanesulfonamidato- κ O]-, (OC-6-11)- (9CI) (CA INDEX NAME)



RN 634598-37-1 HCA

CN Erbium, tris[1,1,2,2,2-pentafluoro-N-[(pentafluoroethyl)sulfonyl-

κO]ethanesulfonamidato- κO]-, (OC-6-11)- (9CI) (CA INDEX NAME)



- IC ICM H01M010-40
ICS H01M004-02
- CC **52-2** (Electrochemical, Radiational, and Thermal Energy Technology)
- ST secondary lithium **battery electrolyte**
aprotic solvent; **battery electrolyte**
imide **transition metal** sulfonyl compd
- IT **Battery electrolytes**
(**electrolyte** solns. contg. sulfonyl compds.,
transition metal ions and imide
anions for secondary lithium **batteries**)
- IT Secondary **batteries**
(lithium; **electrolyte** solns. contg. sulfonyl compds.,
transition metal ions and imide
anions for secondary lithium **batteries**)
- IT 7440-44-0, Carbon, uses
(amorphous; anode; **electrolyte** solns. contg. sulfonyl
compds., **transition metal ions** and
imide anions for secondary lithium **batteries**)
- IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 68848-64-6
(anode; **electrolyte** solns. contg. sulfonyl compds.,
transition metal ions and imide
anions for secondary lithium **batteries**)
- IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
(cathode; **electrolyte** solns. contg. sulfonyl compds.,

transition metal ions and imide
 anions for secondary lithium **batteries**)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate **872-36-6, Vinylene**
carbonate 1120-71-4, 1,3-Propane sultone
132843-44-8 259194-36-0 259194-40-6
634598-36-0 634598-37-1
 (electrolyte solns. contg. sulfonyl compds.,
transition metal ions and imide
 anions for secondary lithium **batteries**)

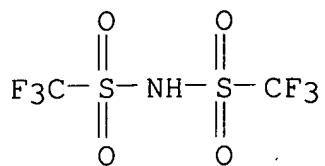
L76 ANSWER 5 OF 6 HCA COPYRIGHT 2006 ACS on STN

137:96277 Synthesis and uses of polyethyleneimine- and
 polypropyleneimine-based conducting polymer **electrolytes**,
 especially for **batteries** and fuel cells. Frech, Roger E.;
 Glatzhofer, Daniel T. (The University of Oklahoma, USA). PCT Int.
 Appl. WO 2002054515 A2 20020711, 89 pp. DESIGNATED STATES: W: AE,
 AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR,
 CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
 ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
 MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE,
 SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW;
 RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA,
 GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR.
 (English). CODEN: PIXXD2. APPLICATION: WO 2001-US50140 20011231.
 PRIORITY: US 2000-258754P 20001229.

AB A covalently cross-linked polymer **electrolyte**, present as
 a continuous thin film (preferably 100-1000 μ thick) with
 preferred specific cond. of .gtorsim.10-3 S/cm at 20-100°,
 has amine groups in the polymer backbone and contains dispersed
 metal salts (e.g., salts with alkali metals, alk. earth
metals, and **transition metals**). The
 polymers are preferably selected from substituted or unsubstituted
 poly(ethyleneimine) and poly(propyleneimine), with repeating unit of
 general structure -[X-N[(R1)n/L]]-, in which R1 is a substituent (H,
 hydrocarbyl or heterohydrocarbyl) that is free of covalent bonds to
 the polymer backbone, L is a covalent crosslinking agent, n = 1-2,
 and X is hydrocarbylene or heterhydrocarbylene (preferably
 C1-5-alkylene). The polyethyleneimine or polypropyleneimine can be
 connected to a second polymer (by the crosslinking agent), such as
 polyethylene, polypropylene, poly(ethylene oxide), poly(propylene
 oxide), poly(ethylene sulfide), and poly(propylene sulfide). The
 polymer **electrolyte**, which can be swollen by or formulated
 with a plasticizing solvent, are suitable for use in
batteries, fuel cells, sensors, supercapacitors, and
 electrochromic devices. The unsubstituted polyethyleneimine and
 polypropyleneimine were prepd. by ring-opening polymn. of
 2-methyloxazoline and 5,6-dihydro-4H-1,3-oxazine, resp., followed by

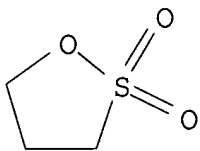
hydrolysis.

- IT **90076-65-6**, Lithium bis(trifluoromethylsulfonylimide)
 (polymer **electrolyte** contg.; synthesis and uses of
 polyethyleneimine- and polypropyleneimine-based conducting
 polymer **electrolytes**, esp. for **batteries** and
 fuel cells)
 RN 90076-65-6 HCA
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,
 lithium salt (9CI) (CA INDEX NAME)



● Li

- IT **1120-71-4DP**, reaction products with polyamines
 (synthesis and crosslinking of; synthesis and uses of
 polyethyleneimine- and polypropyleneimine-based conducting
 polymer **electrolytes**, esp. for **batteries** and
 fuel cells)
 RN 1120-71-4 HCA
 CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



- IC ICM H01M006-18
 ICS H01M010-40; H01M008-10; H01B001-12; C08G073-02; B01D071-60;
 B01D069-12
 CC **52-2** (Electrochemical, Radiational, and Thermal Energy
 Technology)
 Section cross-reference(s): 38, **72**, 76
 ST polyethyleneimine polypropyleneimine conducting polymer
electrolyte; **battery** polymer **electrolyte**
 crosslinked functionalized polyethyleneimine; fuel **cell**
 polymer **electrolyte** crosslinked functionalized
 polyethyleneimine; metal salt crosslinked polyethyleneimine polymer
electrolyte

- IT Superconductor devices
(capacitors, polymer **electrolytes** for; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Conducting polymers
(**electrolytes**; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Glycols, uses
(ethers, polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Ethers, uses
(glycol, polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Esters, uses
Nitriles, uses
(polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Electrochromic devices
Sensors
(polymer **electrolytes** for; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT **Battery electrolytes**
Fuel cell electrolytes
(polymeric; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Polymerization
(ring-opening; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Alkali metal salts
Alkaline earth salts
Transition metal salts
(salts with polyethyleneimines and polypropyleneimines, polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and

- fuel cells)
- IT Capacitors
(superconducting, polymer **electrolytes** for; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Polyamines
(synthesis and crosslinking of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT Polymer **electrolytes**
(synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 108-32-7, Propylene carbonate 872-50-4, N-Methylpyrrolidone, uses 2926-30-9, Sodium triflate 7664-38-2, Phosphoric acid, uses 33454-82-9, Lithium triflate 90076-65-6, Lithium bis(trifluoromethylsulfonylimide)
(polymer **electrolyte** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 67-68-5, DMSO, uses 7447-39-4, Copper chloride (CuCl₂), uses
(polymer **electrolyte** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 441353-87-3P 441353-88-4P 441353-89-5P
(polymer **electrolyte**; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 441353-97-5P
(polymer **electrolyte**; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)
- IT 64-19-7, Acetic acid, uses 68-12-2, Dimethylformamide, uses 79-10-7D, Acrylic acid, esters 84-74-2, Dibutyl phthalate 107-31-3, Methyl formate 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-15-2, 2-(2-Ethoxyethoxy)ethyl acetate 112-49-2, Triglyme 126-33-0, Sulfolane 127-19-5, Dimethylacetamide 143-24-8, Tetraglyme 463-79-6D, Carbonic acid, esters 556-65-0, Lithium thiocyanate 627-93-0, Dimethyl adipate 1493-13-6, Triflic acid 7439-93-2D, Lithium, salts with polyethyleneimines and polypropyleneimines 7440-02-0D, Nickel, salts with polyethyleneimines and polypropyleneimines 7440-09-7D, Potassium,

salts with polyethyleneimines and polypropyleneimines 7440-17-7D, Rubidium, salts with polyethyleneimines and polypropyleneimines 7440-18-8D, Ruthenium, salts with polyethyleneimines and polypropyleneimines 7440-22-4D, Silver, salts with polyethyleneimines and polypropyleneimines 7440-23-5D, Sodium, salts with polyethyleneimines and polypropyleneimines 7440-46-2D, Cesium, salts with polyethyleneimines and polypropyleneimines 7440-50-8D, Copper, salts with polyethyleneimines and polypropyleneimines 7664-38-2D, Phosphoric acid, esters 7664-93-9D, Sulfuric acid, esters 7791-03-9, Lithium perchlorate 10043-35-3D, Boric acid (H3BO3), esters 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate

(polymer **electrolytes** contg.; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

IT 26375-28-0P, 2-Methyloxazoline homopolymer (starting material; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

IT 16024-56-9P (synthesis and crosslinking of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

IT 107-13-1DP, 2-Propenenitrile, reaction products with polyamines **1120-71-4DP**, reaction products with polyamines (synthesis and crosslinking of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

IT 9002-98-6P, Aziridine, homopolymer 26913-06-4P, Poly[imino(1,2-ethanediyl)] (synthesis and functionalization of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

IT 38796-76-8P, Poly[(acetylimino)(1,2-ethanediyl)] (synthesis and in-situ hydrolysis of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and fuel cells)

IT 26338-45-4P (synthesis and reactions of; synthesis and uses of polyethyleneimine- and polypropyleneimine-based conducting polymer **electrolytes**, esp. for **batteries** and

fuel cells)

L76 ANSWER 6 OF 6 HCA COPYRIGHT 2006 ACS on STN

129:122975 Salts of perfluorinated sulfonamides or sulfinamides and their use as ionic conductors and as catalysts. Armand, Michel; Choquette, Yves; Gauthier, Michel; Michot, Christophe (Centre National de la Recherche Scientifique (CNRS), Fr.; Hydro-Quebec). Eur. Pat. Appl. EP ~~850920~~ A2 19980701, 65 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (French). CODEN: EPXXDW. APPLICATION: EP 1997-403187 19971230. PRIORITY: CA 1996-2194127 19961230; CA 1997-2199231 19970305.

AB The salts comprise a cation and R_1SO_xN-Z in amts. to balance the pos. and neg. charges, where R_1 is halo, perhaloalkyl (optionally interrupted by O, S, or NH) or -alkaryl, R_2CF_2 , $R_2CF_2CF_2$, $R_2CF_2CF(CF_3)$, or CF_3CFR_2 ; R_2 is an org. radical which is not perhalogenated; Z is an electron-withdrawing group, which may be the residue of a polymer or may be a polyvalent group attached to other $N-SO_xR_1$ moieties; and $x = 1$ or 2 . Thus, a mixt. of 40 mmol acrylonitrile and 60 mmol 4-CH₂:CHC₆H₄SO₂N-SO₂CF₃ Li⁺ was copolymd. in 82% yield by use of 1,1'-azobis(cyclohexanecarbonitrile) in THF, and the copolymer was used at 20% concn. as a binder in both the carbon anode and the carbon-LiNiO₂ cathode of a **battery** contg. a gelled **electrolyte**.

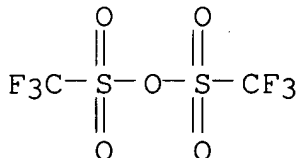
IT 358-23-6, Trifluoromethanesulfonic anhydride

1120-71-4, 1,3-Propane sultone 13036-75-4,
Fluorosulfonic anhydride

(salts of perfluorinated sulfonamides or sulfinamides for use as ionic conductors and as catalysts)

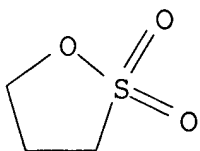
RN 358-23-6 HCA

CN Methanesulfonic acid, trifluoro-, anhydride (6CI, 7CI, 8CI, 9CI)
(CA INDEX NAME)

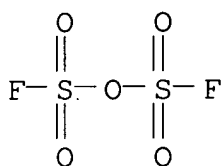


RN 1120-71-4 HCA

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)

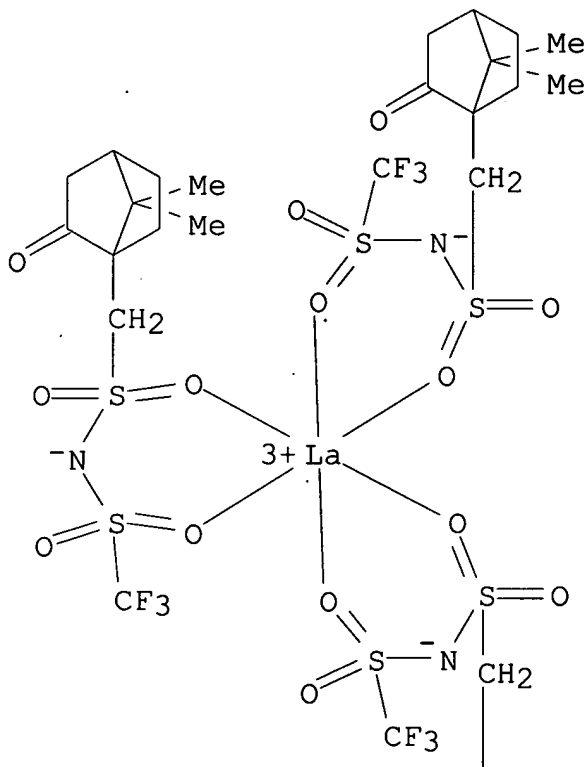


RN 13036-75-4 HCA
 CN Disulfuryl fluoride (9CI) (CA INDEX NAME)

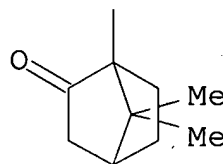


IT **210291-13-7P**
 (salts of perfluorinated sulfonamides or sulfinamides for use as ionic conductors and as catalysts)
 RN 210291-13-7 HCA
 CN Lanthanum, tris[7,7-dimethyl-2-oxo-N-[(trifluoromethyl)sulfonyl-κO]bicyclo[2.2.1]heptane-1-methanesulfonamidato-κO]-
 (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- IC ICM C07C311-48
 ICS C07C311-09; C07D307-64; C07D303-34; C07D407-04; C07D207-452;
 C07D213-76; C07D285-135; C07D251-70; C07D219-10; C07D311-82
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): **52**, 67, 76
 IT Secondary **batteries**
 (polymeric salts of perfluorinated sulfonamides or sulfinamides
 for use in)
 IT 51-79-6, Ethyl carbamate 62-53-3, Benzenamine, reactions
 74-89-5, Methylamine, reactions 78-08-0, Vinyltriethoxysilane

92-82-0, Phenazine 95-54-5, o-Phenylenediamine, reactions
 96-24-2, 3-Chloro-1,2-propanediol 97-93-8, Triethylaluminum,
 reactions 98-16-8, 3-(Trifluoromethyl)aniline 98-61-3,
 4-Iodobenzenesulfonyl chloride 102-54-5, Ferrocene 111-92-2,
 Dibutylamine 142-84-7, Dipropylamine 143-15-7, Dodecyl bromide
 354-64-3, Pentafluoroethyl iodide **358-23-6**,
 Trifluoromethanesulfonic anhydride 375-72-4, Perfluorobutane-1-
 sulfonyl fluoride 392-95-0, 2-Chloro-3,5-dinitrobenzotrifluoride
 421-83-0, Trifluoromethanesulfonyl chloride 541-59-3, Maleimide
 581-28-2, 2-Aminoacridine 605-65-2, 5-(Dimethylamino)-1-
 naphthalenesulfonyl chloride 700-16-3, Pentafluoropyridine
 764-48-7, Ethylene glycol monovinyl ether 814-68-6, Acryloyl
 chloride 917-54-4, Methyllithium 920-66-1, 1,1,1,3,3,3-
 Hexafluoro-2-propanol 1070-89-9, Sodium bis(trimethylsilyl)amide
 1111-78-0, Ammonium carbamate **1120-71-4**, 1,3-Propane
 sultone 1120-99-6, 1,2,4-Triazin-3-amine 1126-79-0,
 Butoxybenzene 1622-32-8, 2-Chloroethanesulfonyl chloride
 1633-82-5, 3-Chloropropane-1-sulfonyl chloride 1648-99-3,
 2,2,2-Trifluoroethanesulfonyl chloride 2444-68-0,
 9-Vinylnanthracene 2495-39-8 2633-67-2, 4-Styrenesulfonyl
 chloride 3520-42-1, Sulforhodamine B 4286-55-9,
 6-Bromo-1-hexanol 4628-94-8, Dipotassium 1,3,4-thiadiazole-2,5-
 dithiolate 5130-24-5, Vinyl chloroformate 5231-87-8 6553-96-4,
 2,4,6-Triisopropylbenzenesulfonyl chloride 7673-09-8,
 Trichloromelamine 7795-95-1, 1-Octanesulfonyl chloride
 9036-19-5, Igepal CA 520 10444-89-0 10531-50-7,
 (R)-2,2,2-Trifluoro-1-phenylethanol **13036-75-4**,
 Fluorosulfonic anhydride 13360-57-1, Dimethylsulfamoyl chloride
 13781-67-4, 3-Thiopheneethanol 20611-81-8, Disodium cyanamide
 21797-13-7 25322-68-3 27835-99-0 40724-67-2 82985-35-1,
 Bis[3-(trimethoxysilyl)propyl]amine 210226-82-7 210227-12-6,
 3-(1,1,2,2-Tetrafluoroethoxy)benzenesulfonyl chloride 210227-69-3
 (salts of perfluorinated sulfonamides or sulfinamides for use as
 ionic conductors and as catalysts)

IT 23384-11-4P, N-[3-(Trifluoromethyl)phenyl]trifluoromethanesulfonamid
 e 35534-15-7P 51903-48-1P 152894-19-4P 210226-80-5P
 210226-90-7P 210226-92-9P 210226-94-1P 210226-95-2P
 210226-97-4P 210226-98-5P 210226-99-6P 210227-00-2P
 210227-01-3P 210227-02-4P 210227-04-6P 210227-08-0P
 210227-11-5P 210227-13-7P 210227-14-8P 210227-15-9P
 210227-19-3P 210227-21-7P 210227-26-2P 210227-27-3P
 210227-32-0P 210227-33-1P 210227-36-4P 210227-41-1P
 210227-42-2P 210227-44-4P 210227-45-5P 210227-49-9P
 210227-51-3P 210227-52-4P 210227-59-1P 210227-60-4P
 210227-64-8P 210227-65-9P 210227-66-0P 210227-67-1P
 210227-70-6P **210291-13-7P** 210291-15-9P 210304-78-2P
 (salts of perfluorinated sulfonamides or sulfinamides for use as
 ionic conductors and as catalysts)